GUIDELINES FOR THE PREPARATION OF AN ENGINEERING REPORT FOR THE PRODUCTION, DISTRIBUTION AND USE OF RECYCLED WATER

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1.0 INTRODUCTION

The draft State of California Recycled Water Criteria require the submission of an engineering report to the California Regional Water Quality Control Board (RWQCB) and the Department of Health Services (DHS) before recycled water projects are implemented. The report shall be amended prior to any modification to the project and describe the manner by which the project will comply with the Recycled Water Criteria. The Recycled Water Criteria are contained in Sections 60301 through 60355, inclusive, of the California Code of Regulations, Title 22, and prescribe:

* Recycled water quality and wastewater treatment requirements for the various types of uses,

* Use area requirements pertaining to the actual location of use of the recycled water, and

* Reliability features required in the treatment facilities to ensure safe performance.

Section 60323 of the Recycled Water Criteria specifies that the report be prepared by a properly qualified engineer, registered in California and experienced in the field of wastewater treatment.

Recycled water projects vary in complexity. Therefore, reports will vary in content, and the detail presented will depend on the scope of the proposed project and the number and nature of the agencies involved in the production, distribution, and use of the recycled water. The report should contain sufficient information to assure the regulatory agencies that the degree of treatment and reliability is commensurate with the requirements for the proposed use, and that the distribution and use of the recycled water will not create a health hazard or nuisance.

The intent of these guidelines is to provide a framework to assist in developing a comprehensive report which addresses all necessary elements of a proposed or modified project. Such a report is

necessary to allow for the required regulatory review and approval of a recycled water project.

2.0 RECYCLED WATER

The following sections discuss the type of information that should be presented and described in the engineering report. Some sections are applicable only to certain types of uses.

2.1 PRODUCER

The producer is the public or private entity that will treat and/or distribute the recycled water used in the project. Where more than one agency is involved in the treatment or distribution of the recycled water, the responsibilities of each agency should be described.

2.2 Raw Wastewater

Describe the chemical quality, including ranges with median and 95th percentile values;

Describe the source of the wastewater to be used and the proportion and types of industrial waste, and

Describe any source control programs.

2.3 Treatment Processes

Provide a schematic of the treatment train;

Describe the treatment processes including loading rates and contact times;

All filtration design criteria should be provided (filtration and backwash rates, filter depth and media specifications, etc.). The expected turbidities of the filter influent (prior to the addition of chemicals) and the filter effluent should be stated, and

State the chemicals that will be used, the method of mixing, the degree of mixing, the point of application, and the dosages.

2.4 Plant Reliability Features

The plant reliability features proposed to comply with Sections 60333 - 60355 of the Recycled Water Criteria should be described in detail. The discussion of each reliability feature should state under what conditions it will be actuated. When alarms are used to indicate system failure, the report should state where the alarm will be received, how

the location is manned, and who will be notified. The report should also state the hours that the plant will be manned.

2.5. Supplemental Water Supply

The report should describe all supplemental water supplies. The description should include:

* Purpose

* Source

* Quality

* Quantity available

* Cross Connection Control Measures

2.6. Monitoring and Reporting

The report should describe the planned monitoring and reporting program, including all monitoring required by the Recycled Water Criteria, and include the frequency and location of sampling. Where continuous analysis and recording equipment is used, the method and frequency of calibration should be stated. All analyses shall be performed by a laboratory approved by the State Department of Health Services.

2.7. Contingency Plan

Section 60323 (c) of the Recycled Water Criteria requires that the engineering report contain a contingency plan designed to prevent inadequately treated wastewater from being delivered to the user. The contingency plan should include:

* A list of conditions which would require an immediate diversion to take place;

* A description of the diversion procedures;

* A description of the diversion area including capacity, holding time and return capabilities;

* A description of plans for activation of supplemental supplies (if applicable);

* A plan for the disposal or treatment of any inadequately treated effluent, and

* A plan (including methods) for notifying the recycled water user, the regional board, the state and local

health departments, and other agencies as appropriate of any treatment failures that could result in the delivery of inadequately treated recycled water to the use area.

3.0 TRANSMISSION AND DISTRIBUTION SYSTEMS

Maps and/or plans showing the location of the transmission facilities and the distribution system layout should be provided. The plans should include the location of all potable water, recycled water and sewer lines within the use area. The report should take cognizance of the following documents:

* Guidelines for the Distribution of Non-potable Water, (California-Nevada Section-AWWA)

* California Waterworks Standards (1997)

* Regulations Relating to Cross-Connections (Title 17, Chapter 5, Group 4)

* Manual of Cross-Connection Control/Procedures and Practices (DOHS)

* Disinfected Tertiary Recycled Water Guidelines: On-Site Facility Retrofitting, (California-Nevada Section-AWWA)

4.0 USE AREAS

The description of each use area should include:

* The type of land uses;

* The specific type of reuse proposed;

* The party responsible for the distribution and use of the recycled water at the site;

* Identification of other governmental entities which may have regulatory jurisdiction over the re-use site such as USDA, State Food and Drug, State Licensing and Certification, etc. These agencies should also be provided with a copy of the Title 22 Engineering Report for review and comment.

* Use area containment measures;

* A map showing:

  -Specific areas of use

  -Areas of public access

-Surrounding land uses

-The location and construction details of wells in or near the use area

-Location and type of signage

* The degree of potential access by employees or the public;

* For use areas where both potable and recycled water lines exist, a description of the cross-connection control procedures which will be used.

In addition to the general information described above, the following should be provided for the following specific proposed uses:

4.1 Irrigation

-Description of what will be irrigated (e.g. landscape, specific food crop, etc.);

-Method of irrigation (e.g. spray, flood, or drip);

-The location of domestic water supply facilities in or adjacent to the use area;

-Site containment measures;

-The direction of drainage and a description of the area to which the drainage will flow;

-A map and/or description of how the setback distances of Section 60310 will be maintained;

-Protection measures of drinking water fountains and designated outdoor eating areas, if applicable;

-Location and wording of public warning signs, and

-The proposed irrigation schedule (if public access is included).

-Measures to be taken to exclude or minimize public contact.

4.2 Impoundments

-The type of use or activity to be allowed on the impoundment;

-Description of the degree of public access;

-The conditions under which the impoundment can be expected to overflow and the expected frequency, and

-The direction of drainage and a description of the area to which the drainage will flow.

4.3 Cooling

-Type of cooling system (e.g. cooling tower, spray, condenser, etc.);

-Type of biocide to be used, if applicable;

-Type of drift eliminator to be used, if applicable, and

-Potential for employee or public exposure, and mitigative measures to be employed.

4.4 Groundwater Recharge

An assessment of potential impacts the proposal will have on underlying groundwater aquifers. The appropriate information shall be determined on a case by case basis.

4.5 Dual Plumbed Use Areas

In accordance with Sections 60314 through 60316 of the Recycled Water Criteria.

4.6 Other Industrial Uses

The appropriate information shall be determined on a case by case basis.

4.7 Use Area Design

The report should discuss how the facilities will be designed to minimize the chance of recycled water leaving the designated use area. Any proposed deviation from the Recycled Water Criteria and necessity therefore, should be discussed in the report. Any domestic water distribution system shall be protected from the recycled water in accordance with the Regulations Relating to Cross-Connections and the California Waterworks Standards.

4.8 Use Area Inspections and Monitoring

Identify the locations at the use area where problems are most likely to occur (e.g. ponding, runoff, overspray) and propose a program of use area inspection and reporting.

4.9 Employee Training

The report should describe the training which use area employees will receive to ensure compliance with the Recycled Water Criteria, and identify the entity that will provide the training and its' frequency. The report should also identify any written manuals of practice to be made available to employees.

4.10 Rules and Regulations

The procedures, restrictions, and other requirements that will be imposed by the distributor and/or user should be described. The requirements and restrictions should be codified into a set of rules and regulations. The rules and regulations should include measures to be used to protect the public health and prevent cross-connections. Describe in the report the feasibility of the adoption of enforceable regulations to cover all of the distribution systems and use areas, and identify the agency or agencies that would adopt them.